

WHAT IS CLAIMED IS:

1. A location registration apparatus comprising:

5 a presence area storage unit for storing a presence area information indicating a presence area of a portable communication terminal;

10 a traveling schedule storage unit for storing a scheduled path information indicating a scheduled path of a moving object and a scheduled time information indicating a scheduled time of the movement of the moving object; and

15 a control unit for, when the portable communication terminal is moving with the moving object, changing the presence area information of the portable communication terminal stored in the presence area storage unit based on the current time, the scheduled path information, and the scheduled time information stored in the traveling schedule storage unit.

2. A location registration apparatus according to Claim 1,

20 wherein the control unit receives, from a moving object communication apparatus installed in the moving object, an identification information of a portable communication terminal moving with the moving object, and specifies the portable communication terminal moving with the moving object based on
25 the identification information.

3. A location registration apparatus according to any one of Claims 1 and 2,

wherein the scheduled path information indicates one or

more pass areas through which the moving object passes, and the scheduled time information indicates the time for which the moving object is located in each of the pass areas, and

wherein, while the portable communication terminal is moving with the moving object, the control unit specifies the pass area within which the portable communication terminal is to be located based on the current time, the scheduled path information, and the scheduled time information, and changes the presence area information of the portable communication terminal to the one corresponding to the specified pass area.

4. A location registration apparatus according to Claim 3,

wherein the pass area is a base station area each formed by a base station.

5. A location registration apparatus according to Claim 4,

wherein the traveling schedule storage unit stores an auxiliary path information indicating a more extensive area than the pass area indicated by the scheduled path information; and

wherein, when the moving object is not moving on schedule, the control unit changes the presence area information on the portable communication terminal moving with the moving object to a presence area information according to the location of the moving object based on the auxiliary path information and the scheduled time information.

6. A location registration apparatus according to Claim

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wherein the control unit recognizes that the moving object does not move on schedule by receiving, from a base station forming a base station area through which the moving object passes, a notice of abnormal running that indicates that the moving object does not pass the base station area on the schedule indicated on the scheduled time information.

7. A location registration apparatus comprising:

10 a traveling schedule storage unit for storing a scheduled path information indicating a scheduled path of a moving object and a scheduled time information indicating a scheduled time of the movement of the moving object; and

a control unit for, when the portable communication terminal is moving with the moving object, specifying a location of the moving object based on the current time, the scheduled path information and the scheduled time information in the traveling schedule storage unit, and specifying a presence area of the portable communication terminal based on the location of the moving object.

8. A location registration apparatus according to Claim

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wherein the control unit receives, from a moving object communication apparatus installed in the moving object, an identification information of a portable communication terminal moving with the moving object, and specifies the portable communication terminal moving with the moving object based on the identification information.

9. A location registration apparatus according to any one of Claims 7 and 8,

wherein the scheduled path information indicates one or more pass areas through which the moving object passes, and the scheduled time information indicates the time for which the moving object is located in each of the pass areas, and

wherein, when the portable communication terminal is moving with the moving object, the control unit specifies the pass area within which the portable communication terminal is to be located based on the current time, the scheduled path information, and the scheduled time information, and specifies the presence area information of the portable communication terminal to the one corresponding to the specified pass area.

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10. A location registration apparatus according to Claim 9,

wherein the pass area is a base station area each formed by a base station.

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11. A location registration apparatus according to Claim 10,

wherein the traveling schedule storage unit stores an auxiliary path information indicating a more extensive area than the pass area indicated by the scheduled path information; and

wherein, when the moving object is not moving on schedule, the control unit specifies the presence area information on the portable communication terminal moving with the moving object according to the location of the moving object based on the

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auxiliary path information and the scheduled time information.

12. A location registration apparatus according to Claim 11,

5 wherein the control unit recognizes that the moving object does not move on schedule by receiving, from a base station forming a base station area through which the moving object passes, a notice of abnormal running that indicates that the moving object does not pass through the base station area on the schedule
10 indicated on the scheduled time information.

13. A location registration method comprising:

storing, in a presence area storage unit, a presence area information indicating a presence area of a portable
15 communication terminal, and

changing the presence area information of the portable communication terminal moving with a moving object based on the current time, a scheduled path of the moving object, and a traveling schedule of the moving object.

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14. A mobile communication network comprising:

a plurality of base stations each of which forms a base station area;

a presence area storage unit for storing a presence area
25 information indicating a presence area of a portable communication terminal;

a traveling schedule storage unit for storing a scheduled path information indicating one or more base station areas through which a moving object accompanied by one or more said

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portable communication terminals passes, and a scheduled time information indicating a scheduled time of the movement of the moving object; and

1 a control station which, when the portable communication
5 terminal is moving with the moving object, specifies a present area information indicating a base station area within which the moving object is predicted to be located based on the current time, the scheduled path information, and the scheduled time information stored in the traveling schedule storage unit,
10 changes the presence area information of the portable communication terminal stored in the presence area storage unit based on the specified presence area information, retrieves the presence area information of the portable communication terminal from the presence area storage unit when an incoming call request
15 to the portable communication terminal is received, and transmits the incoming call request to the base station in the presence area indicated by the retrieved presence area information.

20 15. A mobile communication network according to Claim 14, wherein the traveling schedule storage unit stores an auxiliary path information indicating a more extensive area than the base station area; and

25 wherein, when the moving object is not moving on schedule, the control station specifies the area within which the moving object is located based on the current time, the auxiliary path information, and the scheduled time information, and, based on this information indicating the area, changes the presence area information of the portable communication terminal moving with

the moving object.

16. A mobile communication network comprising:

a plurality of base stations each of which forms a base
5 station area;

a presence area storage unit which stores a presence area information indicating presence areas of a plurality of portable communication terminals, and stores an identification information of a moving object for the portable communication terminal moving with the moving object;

a traveling schedule storage unit for storing a scheduled path information indicating one or more base station areas through which the moving object passes, and a scheduled time information indicating the scheduled time of the movement of the moving object; and

a control station that, when receiving an incoming call request to a portable communication terminal moving with the moving object, specifies the presence area of the portable communication terminal based on the current time, the scheduled path information, and the scheduled time information of the moving object with the identification information, and transmits the incoming call request to the base station in the specified presence area.

25 17. A mobile communication network according to Claim 16,
 wherein the traveling schedule storage unit stores an
 auxiliary path information indicating a more extensive area than
 the base station area, and

wherein the control station specifies the presence area

of a portable communication terminal moving with the moving object based on the current time, the auxiliary path information and the scheduled time information for the identification information when the moving object is not moving on schedule.

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18. A mobile communication network according to any one of Claims 14 to 17:

wherein the base station comprises

10 a storage unit for storing a scheduled presence time information indicating the time for which the moving object is to be within a base station area of the base station; and

a base station control unit for judging if the moving object is moving on schedule based on the scheduled presence time information, and sending, when judged that the moving object is
15 not moving on schedule, a notice of abnormal running indicating that to the control station,

and wherein the control station recognizes, by receiving the notice of abnormal running from the base station, that the moving object does not move on schedule.

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19. A mobile communication network according to Claim 18,

wherein the base station control unit compares the time at which a notice of the location is received from a moving object communication unit installed on the moving object with the time
25 indicated by the presence scheduled time information, and determines, based on the result of comparison, whether or not the moving object moves on schedule.